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April 25, 2005

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APPLICATION NUMBER: 60/490,925

FILING DATE: July 30, 2003

**By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS**



L. Edelen

**L. EDELEN
Certifying Officer**

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

INVENTOR(S)					
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<input type="checkbox"/> Additional inventors are being named on the <u>N.A.</u> separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
SLOTTED HULL					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification		Number of Pages		<input type="checkbox"/> CD(s), Number	
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<input checked="" type="checkbox"/> Drawing(s)		Number of Sheets		<input type="checkbox"/> Other (specify)	
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<input type="checkbox"/> Application Data Sheet, See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.				FILING FEE AMOUNT (\$)	
<input checked="" type="checkbox"/> A check or money order is enclosed to cover the filing fees					
<input type="checkbox"/> The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:					
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.				\$80-	
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: <u>Not Applicable</u>					

Respectfully submitted,

SIGNATURE

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Date 11 July 2003

REGISTRATION NO.
(if appropriate)
Docket Number:

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FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT

(\$)**80-**

Complete if Known

Application Number
Filing Date
First Named Inventor **BUDDIE GORDON MILLER**
Examiner Name
Group Art Unit
Attorney Docket No.

METHOD OF PAYMENT

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number
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☐ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☐ Applicant claims small entity status. See 37 CFR 1.27

2. ☒ Payment Enclosed:

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
101	740	201	370	Utility filing fee	
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	\$ 80-

SUBTOTAL (1) (\$)**80-**

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent	-20** =	X	
Multiple Dependent	-3** =	X	

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple-dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for ex parte reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)

SUBMITTED BY

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Provisional Patent Applicattion of

Buddie Gordon Miller for

TITLE: SLOTTED HULL

CROSS REFERENCE TO RELATED APPLICATIONS

Not Applicable

FEDERALLY SPONSORED RESEARCH

Not Applicable

SEQUENCE LISTING OR PROGRAM

Not Applicable

BACKGROUND OF INVENTION – Field of Invention

This invention relates to the hulls of boats.

BACKGROUND OF INVENTION

This invention sets out to improve the disposition of the hulls in boats, yachts and ships all of which may be propelled by a variety of means including but not limited to rowing, pedaling, sails, mechanical engines, electric motors, towing, etc. These vessels have one or more hulls, one or more of which rests partially submerged at the surface of the water. It is also applicable to submarine vessels which operate either fully or partially submerged. For the purposes of this Application, the term "boat" shall be construed to include all and any of the above, and in any combinations thereof.

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BACKGROUND OF INVENTION *cont'd*

The hull of a boat is generally designed to be laterally symmetrical and the weight-loadings of and in the boat are generally disposed so that the hull of the boat rests in balanced laterally symmetrical aspect on the water.

The submerged portion of the hull will generally be of roughly triangular or of inverted arcuate segment, in shape. In some instances the bottom of the hull may be essentially flat, yielding a rectangular submerged section, or may incorporate compound shapes.

In the majority of these instances, the hull will displace a body of water that is essentially symmetrical in lateral cross-section and thereby yields a Centre of Buoyancy (COB) that acts through the longitudinal centre-line of the hull. A consequence of this disposition of COB is that the boat has a tendency to rotate or see-saw (roll) about the virtual pivot-point of the COB. This tendency is exacerbated with increasing distance of separation of the Centre of Gravity (CG) of the boat, either above or below, from the COB.

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The result of this interaction of forces is a hull that rolls (side-to-side) and/or pitches (front-to-back) under the influences of waves, wind and/or movement of people or other loads within the hull. Significant rolling or pitching of a boat directly reduce the stability of the boat, compromise its safe operation, and detract from the comfort and well-being of the occupants.

Traditional methods for inhibiting the rolling/pitching actions of boats include: -

- Extended keels under the hull: These bring the penalties of a) increased weight; b) increased wetted-surface/drag; c) increased structural demands on the hull; d) increased power-consumption; e) increased draft.
- Weighty Ballast internal or external to the hull: This comes with the penalties of a) increased weight; b) increased wetted-surface/drag; c) increased structural demands on the hull; d) increased power-consumption; e) increased draft; f) increased articulating mechanisms - in the case of moveable ballast.
- Stabilizing Sails: These require a mast and its associated rigging.
- Multihulls – the rigid juxtaposition of additional hull(s) parallel to the primary hull: These introduce the penalties of a) substantially increasing the beam

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(width) of the boat with consequent limitations in docking space requirement; overland road transportability; accessibility to travel-lifts common at boat marinas. Multihulls also have the limitation of not being aesthetically favoured by the majority of boaters. The most significant limitation of multi-hulls is the extreme difficulty in righting once overturned and moreso if it is a sailboat with mast and sails attached.

- Fixed and/or articulating stabilizer mechanisms: These generally include external appendages which are vulnerable to collision damage. They also introduce additional mechanical systems with attendant demands for installation, operation and maintenance. Included among these systems are gyroscopic-based mechanisms.

It is clear that an elegant solution to the problems of rolling/pitching of boats would surmount or circumstep the limitations of the above-listed systems.

BACKGROUND OF THE INVENTION – Objects and Advantages.

Accordingly, several objects and advantages of the disclosed Slotted Hull invention are: to provide a boat hull which significantly reduces the rolling-action and/or the pitching-action to which traditional boat hulls are susceptible, and further:

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- a) to provide a boat hull of significantly enhanced inherent stability over traditional boat hulls;
- b) to provide a boat hull that will be safer in use and operation than traditional boat hulls;
- c) to provide a boat hull which will accord a significantly increased level of comfort and well-being to its occupants.
- d) to provide a boat hull which retains favoured aesthetics while providing the substantial benefits of enhanced stability, enhanced safety and enhanced comfort.
- e) to provide a boat hull with the enhancing benefits listed to d) above, without the introduction of substantial additional weight to the hull.
- f) to provide a boat hull with the enhancing benefits listed to d) above, without significant increase to the power-requirements for propelling the hull.
- g) to provide a boat hull with the enhancing benefits listed to d) above, without any significant increase to the draft of the hull.
- h) to provide a boat hull with the enhancing benefits listed to d) above, without significant increase to the wetted-surface/drag of the hull.

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- i) to provide a boat hull which delivers the enhancing benefits listed to d) above, for which benefits, the enabling structure enhances the inherent strength, stiffness and integrity of the basic hull.
- j) to provide a boat hull which delivers the enhancing benefits listed to d) above in entirely passive manner, without the introduction of any articulating mechanical or powered devices.
- k) to provide a boat hull which delivers the enhancing benefits listed to d) above, without requiring appendages external to the hull.
- l) to provide a boat hull which delivers the enhancing benefits listed to d) above, without any requirement for alteration of the basic external dimensions of the boat/hull.
- m) to provide a boat hull which delivers the enhancing benefits listed to d) above and which is adaptable to most, and possibly all, common hull configurations.
- n) to provide a boat hull which delivers the enhancing benefits listed to d) above and is easy and uncomplicated to manufacture.
- o) to provide a boat hull which delivers the enhancing benefits listed to d) above and which may readily be manufactured using any of the common boat-building materials

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- p) to provide a boat hull which delivers the enhancing benefits listed to d) above without substantial increase in construction cost; and possibly with reduced construction cost versus alternative systems of stabilization.
- q) to provide a boat hull which delivers the enhancing benefits listed to d) above and which would require no new skills or techniques for its operation and use; and which, by its reduction in user/operator fatigue, would enhance the comfort and well-being of its occupants.
- r) to provide a boat hull which delivers the enhancing benefits listed to d) above, and which would satisfy the requirements of the various regulatory/certifying agencies.

Still further objects and advantages will become apparent from a consideration of the ensuing description and drawings.

SUMMARY

The disclosed Slotted Hull invention engineers the vertical separation of the water displaced under a boat hull, into two or more effectively disparate bodies of water.

Each separate body of water then generates its own Centre of Buoyancy (COB) acting

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under the hull at a designed distance from the COB of any other body of water. This separation of Centres of Buoyancy establishes two or more "feet" for the hull to "stand" on in the water rather than the conventional situation of a unit-body hull balancing see-saw fashion on a single, central pivot-point.

This separation of COB's is achieved through the introduction of relatively narrow vertical slot(s) running through the hull of the boat at and below its waterline. The resulting "multi-footed" hull would be subject to significantly less rolling/pitching action; would be more stable on the water; would be safer in use and operation; and would enhance the comfort and well-being of its occupants.

DRAWINGS – FIGURES

Fig. 1 shows a lateral section of a typical boat hull with a vertical slot running lengthwise through the centre-line of the hull.

Fig 2 shows a lateral section of the bodies of water displaced by the boat hull of Fig 1.

Fig 3 shows a lateral section of typical boat hull with a multiplicity of vertical slots running lengthwise through the hull.

Fig 4 shows a lateral section of the body of water displaced by the boat hull of Fig 3.

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Fig 5 shows a lateral section of a hull of a typical submarine with a vertical slot running lengthwise through the hull.

Fig 6 shows a side view of a typical boat with a vertical slot running lengthwise through the hull.

Fig 7 shows a side view of a typical boat with a vertical slot running lengthwise through the boat hull.

Fig 8 shows a front view of the boat of Fig 7.

Fig 9 shows a lateral section through the boat of Fig 7.

Fig 10 shows a plan view of the boat of Fig 7

Fig 11 shows a lateral section through a typical fixed-keel sailboat with a vertical slot running lengthwise through the hull and keel.

Fig 12 shows an underside view of a typical boat hull with a vertical slot running lengthwise through the hull, the slot having intermittent openings along its bottom edge.

Fig 13 shows an underside view of a typical boat hull with vertical slots running longitudinally and transversely through the hull.

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Fig 14 shows a side view of a typical boat with a vertical slot running lengthwise part-way through the boat hull, the slot being closed at both its fore and aft ends.

Fig 15 shows a side view of a typical boat with a vertical slot running lengthwise, part-way through the boat-hull, the slot being closed at its fore-end and open at its aft-end.

Fig 16 shows an underside view of a typical boat hull with a vertical slot running in angled configuration transversely across the hull.

DRAWINGS – Reference Numerals

21 centre of buoyancy (COB)	32 fore bottom lip
23 slot	33 slot aft-end
25 slot bottom edge	34 aft bottom-lip
27 slot top edge	35 slot-trunk
28 fore-slope	37 fixed-keel
29 displaced water	39 keel-strip
30 aft-slope	41 keel-opening
31 slot fore-end	

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DETAILED DESCRIPTION

The hull of a typical boat presents a single Centre-of-Gravity (CG) to the supporting water, this CG conventionally falling somewhere along the longitudinal centre-line of the hull.

The hull displaces a single coherent body of water which exerts an upthrust on the hull, this upthrust being effectively centered at its Centre of Buoyancy (COB). The COB acts at the CG of the body of displaced water which is not necessarily coincident with the CG of the boat either vertically or longitudinally.

Subject to the action of wind and/or waves and/or movement of loads within the boat, the single COB provides a single virtual pivot-point about which the hull of the boat tends to rotate in see-saw fashion. This rolling (side-to-side) and/or pitching (fore-and-aft) action: a) serves to limit the stability of the boat; b) limits the safe operation of the boat, and c) limits the comfort and well-being of the occupants of the boat.

It must be noted that rolling and/or pitching as described above are generally responses to dynamic stimuli, whereas stability may be seen as the tendency to resist

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rotational responses to shifting internal loads even in conditions of complete external calm.

The subject Slotted Hull invention alleviates the foregoing limitations by the introduction of vertical, relatively narrow slot(s) running through the hull of a boat and intersecting the water-line of the hull in all situations of operation and/or loading. The effect of these slot(s) is to vertically separate the body of water displaced by the hull into two or more effectively separate and distinct bodies, each body then exerting its own "body-of-buoyancy" and so its own COB to the hull.

Since the "effective" Centre of Gravity of a boat is not of itself a concentration of the actual weights distributed about the boat, a separation of the supporting water into different "bodies-of-buoyancy" would induce separation of the weight of the boat into different Centres-of-Gravity commensurate with the geometric footprints of the "bodies-of-buoyancy". This effective separation of COB's and of CG's would have the effect of providing the boat hull with a multiplicity of "feet" on which to stand in

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the water, rather than the conventional single pivot-point (COB) around which to rotate/see-saw.

Fig 1 illustrates a transverse section of a basic typical boat hull with a single vertical slot 23 running lengthwise along the centre-line of the hull. This slot 23 may be seen to separate the supporting water into two separate and distinct bodies of water, each separate body thus generating its own Centre of Buoyancy (COB) 21. As may be seen, the slot top edge 27 is closed along its length while the slot bottom edge 25 is open along its length.

Fig 2 illustrates a transverse section of the two separate bodies of displaced water 29 which are created by the slotted hull of Fig 1. The two created COB's 21 may be seen to be laterally distanced from each other. This separation of the supporting water into two separate and distinct COB's 21 induces into the hull commensurate separation of the boat weight into two separate Centers of Gravity also laterally distanced from each other. The combined effect of these separations is to generate two virtual "feet" on which the hull "stands" in the water. There is some similarity in this effect to the principle of the catamaran which employs two separate and distinct

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hulls to generate two separate and laterally distanced centers-of-buoyancy. The boat of this invention however generates a similar effect within the envelope of a single integral hull.

Fig 3 shows a transverse section of a typical boat hull with a multiplicity of vertical slots 23 running along the length of the hull. Differing from the embodiment of Fig 1, in this embodiment the slot bottom edges 25 are closed thus preserving the integrity of the outer plating of the hull and greatly enhancing the inherent strength of the hull structure. The slots 23 penetrate the hull plating only at the very slot fore-end 31 and at the very slot aft-end 33 (31 and 33 may be seen at Fig 7).

Fig 4 shows a transverse section of the body of displaced water 29 generated by the hull of Fig 3. Apparent here is the multiplicity of COB's 21 generated, spaced each from the other. The lateral stability imparted by this configuration may be likened to that of a basic log-raft.

Fig 5 shows a lateral section of a typical submarine vessel also incorporating a relatively narrow vertical slot 23 running lengthwise along its centre-line. In keeping with the principle of this invention, the slot 23 effectively separates the water displaced by the hull into two effectively separate bodies and so generates two

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separate and laterally distanced COB's 21. These distanced COB's 21 replace the single, centrally positioned COB of conventional hulls around which the hull would tend to rotate. This results in a more laterally stable hull with less requirement for powered, dynamic stabilizers common to submarine vessels. Alternative embodiments of the slot placement illustrated in Fig 5 could have the slot 23 centered vertically in the hull or positioned more in the upper half of the hull section.

Fig 6 shows a side view of a configuration of slot 23 wherein the slot bottom edge 25 is engineered to be as low as is practicable along the middle portion of the slot 23 in order to maximize the separation of the bodies of water displaced. The slot 23 however is fabricated with a fore-slope 28 approaching the slot fore-end 31, and with an aft-slope 30 approaching the slot aft-end 33. These sloped sections are intended to minimize the vertical height of the slot 23 at its fore-end 31 and aft-end 33 and by the reduction in size of these openings to the hull, so enhance the structural strength and integrity of the hull in these areas.

The bottom lips 32 and 34 of these reduced openings should be engineered to lie somewhat below the hull water-line in its least loaded (lightship) condition.

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Illustrated in Fig 7 is a side view of a typical boat with a single vertical slot 23 open both at its fore-end 31 and its aft-end 33. Fig 8 shows a front view of the boat of Fig 7 and illustrates the two COB's 21 generated by the slot 23. Fig 9 shows a lateral section of the boat of Fig 7 and illustrates the slot-trunk 35 which is fabricated to create the slot 23. Illustrated at Fig 10 is a plan view of the boat of Fig 7.

Illustrated in Fig 11 is a transverse section of a typical sailboat with a fixed-keel 37. Shown is the vertical slot 23 extending some way vertically down through the fixed-keel 37. Also shown is the fabricated slot-trunk 35 which extends the slot 23 vertically upward to a point at or above the anticipated operating water-line of the hull.

Fig 12 shows an underside view of a typical boat hull with a single vertical slot 23 running along the centre of the hull. In this embodiment the bottom edge of the slot 23 is intermittently closed by keel-strips 39 alternating with keel-openings 41. This embodiment is intended to principally preserve the structural strength of the hull

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while at the same time permitting practical access to the interior of the slot 23 for the manual or mechanical cleaning of any marine growth accumulating therein.

Fig 13 shows an underside view of a typical boat hull incorporating both a longitudinal and an angled transverse slot 23. In this embodiment the supporting water would be separated into four different "bodies-of-buoyancy" each one generating its own COB 21. This four-legged stance would serve to inhibit both the rolling (side-to-side) and the pitching (fore-and-aft) actions of the hull.

Fig 14 shows a side-view of a typical boat having a vertical slot 23 running part-way only along the center-line of the hull. In this embodiment the slot 23 is closed at both its fore-end 31 and its aft-end 33, while being completely or intermittently open along its bottom-edge 25. This embodiment preserves maximum structural strength and integrity at both ends of the hull while sacrificing some performance through the reduced length of the slot 23.

Fig 15 shows an alternative embodiment of the partial-slot 23 of Fig 14. In this embodiment the slot fore-end 31 remains closed while the slot aft-end 33 is open.

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This embodiment maximizes the hull strength and integrity at its forward end where it is most vulnerable.

Fig 16 shows an underside view of a typical boat hull incorporating a single, angled, transverse slot 23. The transverse slot 23 generates two COB's 21 longitudinally distanced from each other along the longitudinal centre-line of the hull. This transverse slot 23 would minimize the pitching (fore-and-aft) action of hull.

ADDITIONAL and ALTERNATIVE EMBODIMENTS

Given the great variety of boat and/or hull types that are in common use, the designation of a single preferred embodiment of the invention is not considered to be appropriate. Singular or combined embodiments of the alternatives shown or described or anticipated by the drawings and descriptions herein presented, will be found appropriate to most individual boat/hull types in common use.

Manufacturing and Use

The straightforward simplicity of the functional element-- a slot through-along or through-across, a boat hull--provides for utmost simplicity of construction.

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Essentially all that is required is a fabricated or molded hollow trunk which would create and enclose the slot. This could quite easily be fabricated by a boat-builder of basic skill and using any of the common boat-building materials: wood/steel/aluminum/composites/etc, or a combination of any of these materials.

The engineering design demands are minimal as adding a rigid structural member to the inside of a hull would inherently enhance the stiffness and strength of the combined structure. At best the trunk could be fully integrated to the longitudinal and transverse structural framing members of the hull and so significantly enhance the structural stiffness and strength of the combined structure and so enable weight-savings in the fabrication of other components of the complete boat. This integration of the structural framework could also be used to advantage in designing in structural/watertight bulkheads; watertight compartments; flotation chambers; crash compartments; etc.

Among the specific considerations in design and manufacturing are: (A) Where transverse slots are employed, these slots should be fully or in most part closed along their

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undersides. This is in recognition of the significant weakening of the hull structure, and of the significant disruption of streamlined water-flow, which would result from a substantially open-bottom transverse slot.

- B) For the dictates of aesthetics, the slot may be configured to fall entirely below the hull water-line in the hull designed full-loaded condition. This however would preclude the increasing effectiveness of the slot in conditions where the boat is loaded in excess of its designed full-load.
- C) Creation of an open slot through the submerged portion of a boat hull would clearly result in a reduction in flotation (buoyancy) of the hull in the extent of the volume of the submerged portion of the slot. Given that the slot is designed to be relatively narrow, this loss of flotation volume should be of little significance when spread over the total volume of the submerged portion of the hull.
- D) Of prima facie concern must be the not insignificant increase in wetted-surface presented by the side-walls of a slot. There is some trade-off in this against the direct resistance that would be offered by a contoured hull stem-section in lieu of an open fore-end of a slot.

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This limitation is largely eliminated in embodiments incorporating closed fore-ends of the slots as in Figs 14 and 15. In the case of slots with open fore-ends, this limitation may be substantially mitigated by the installation of a contoured deflector-cap spaced a very short distance in front of the open fore-end of the slot.

- E) There is also the inconvenience of a slot-trunk which intrudes into the accommodation spaces of a boat. This would be an unavoidable cost of the substantial benefits to be derived from the invention and the boat-builder would need to design around this intrusion in the layout of the accommodation plan for the boat.

In operation and use, it is not anticipated that the introduction of narrow slot(s) to a hull would result in any significant changes in the boat-handling and so no new skills or techniques in boat-operation would become necessary.

In the context that a more stable; more safe in operation; and more comfortable boat would substantially reduce operator and occupant fatigue and discomfort, a boat

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incorporating this Slotted Hull invention should provide for more comfortable, more confident and less stressful operation and use.

It is evident then that the herein disclosed invention of the Slotted Hull provides several significant described, illustrated and anticipated advantages over conventional hulls in common use.

Advantages

From the description and illustrations presented herein, a number of advantages of the disclosed Slotted Hull invention become evident: -

The Slotted Hull employs relatively narrow vertical slots, running along the length and /or across the width, and principally below the water-line of a boat hull, to separate the water displaced by the hull into two or more separate "bodies-of-buoyancy" each one generating its own Centre of Buoyancy (COB). These multiple created COB's act as multiple "feet" on which the boat hull "stands" in the water and which substantially inhibit the rolling and/or pitching actions to which conventional hulls are susceptible, and further:-

- a) provide a boat hull of significantly enhanced inherent stability over traditional

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boat hulls;

- b) provide a boat hull that will be safer in use and operation than traditional boat hulls;
- c) provide a boat hull which will accord a significantly increased level of comfort and well-being to its occupants.
- d) provide a boat hull which retains favoured aesthetics while providing the substantial benefits of enhanced stability, enhanced safety and enhanced comfort.
- e) provide a boat hull with the enhancing benefits listed to d) above, without the introduction of substantial additional weight to the hull.
- f) provide a boat hull with the enhancing benefits listed to d) above, without significant increase to the power-requirements for propelling the hull.
- g) provide a boat hull with the enhancing benefits listed to d) above, without any significant increase to the draft of the hull.
- h) provide a boat hull with the enhancing benefits listed to d) above, without significant increase to the wetted-surface/drag of the hull.

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- i) provide a boat hull which delivers the enhancing benefits listed to d) above, for which benefits, the enabling structure enhances the inherent strength, stiffness and integrity of the basic hull.
- j) provide a boat hull which delivers the enhancing benefits listed to d) above in entirely passive manner, without the introduction of any articulating mechanical or powered devices.
- k) provide a boat hull which delivers the enhancing benefits listed to d) above, without requiring appendages external to the hull.
- l) provide a boat hull which delivers the enhancing benefits listed to d) above, without any requirement for alteration of the basic external dimensions of the boat/hull.
- m) provide a boat hull which delivers the enhancing benefits listed to d) above and which is adaptable to most, and possibly all, common hull configurations.
- n) provide a boat hull which delivers the enhancing benefits listed to d) above and is easy and uncomplicated to manufacture.

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- o) provide a boat hull which delivers the enhancing benefits listed to d) above
and which may readily be manufactured using any of the common boat-
building materials
- p) provide a boat hull which delivers the enhancing benefits listed to d) above
without substantial increase in construction cost; and possibly with reduced
construction cost versus alternative systems of stabilization.
- q) provide a boat hull which delivers the enhancing benefits listed to d) above
and which would require no new skills or techniques for its operation and use;
and which, by its reduction in user/operator fatigue, would enhance
the comfort and well-being of its occupants.
- r) provide a boat hull which delivers the enhancing benefits listed to d) above,
and which would satisfy the requirements of the various regulatory/certifying
agencies.

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Conclusion, Ramifications and Scope

Accordingly the reader will see that the Slotted Hull of this invention presents boat hulls which retain popular aesthetics and handling characteristics and further provide enhanced stability, safety and comfort.

The Slotted Hull incorporates relatively narrow, vertical slots running longitudinally and/or transversely through the hull of the boat. The slots are positioned principally below the water-line of the hull and their effect is to separate the supporting water into effectively separate and distinct "bodies-of-buoyancy" each of which would generate its own Centre of Buoyancy (COB). This multiplicity of COB's, each falling at some distance from any other generates a multiplicity of effective "feet" on which the hull "stands" in the water, in contrast to the single COB of conventional hulls, the single COB being a single virtual pivot-point around/about which a hull tends to rotate/see-saw in rolling/pitching action.

The multiplicity of 'spread-apart feet' of the Slotted Hull of this invention would impart greatly enhanced stability, safety and comfort levels to the hull and commensurately enhance the operation and use experience. This is accomplished in a manner that is elegant in concept and design; simple, uncomplicated and inexpensive

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in manufacture; has minimal maintenance requirements; and is passive, straightforward and intuitive in operation and use.

Although the description above contains many specificities these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. For example, slots incorporated to boat hulls may: -

- incorporate contoured 'lips' wherever an edge of a slot interfaces with the water;
- incorporate side-walls that are not perfectly vertical to the hull;
- incorporate side-walls that are not perfectly parallel to each other;
- incorporate top and bottom edges that are not perfectly horizontal to the hull;
- incorporate top and bottom edges that are not perfectly parallel to each other;
- be fitted with screens or solid closures to inhibit ingress to marine organisms;
- be fitted with deflector appendages for the regulation and control of water-flow into, through, across or around the slot;
- etc.

Thus the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the examples given.

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CLAIMS

I claim:

1. A hull of a boat incorporating at least one more or less vertical slot extending longitudinally and/or transversely partly or completely through said hull and extending to below the waterline of said hull.
- Other claims to follow.

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ABSTRACT

A boat hull providing substantially enhanced stability, safety and comfort over conventional boat hulls in common use; incorporating at least one relatively narrow, more-or-less vertical slot (23) running longitudinally and/or laterally through the hull of the boat and positioned so that the slot(s) (23) intersects a major portion of the depth of the water displaced by the boat hull.

The slot (s) (23) may be fully or partially closed at any of its fore-end (31) or aft-end (33) or bottom-edge (25).

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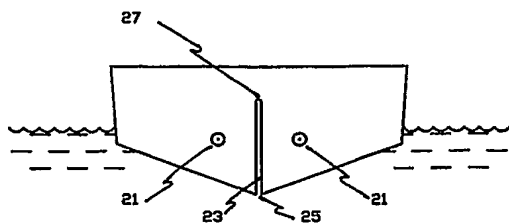


FIG 1

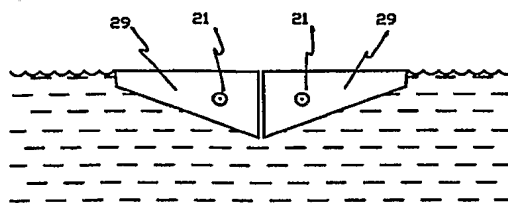


FIG 2

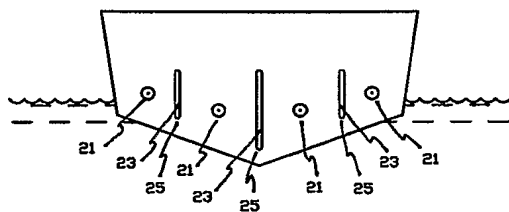


FIG 3

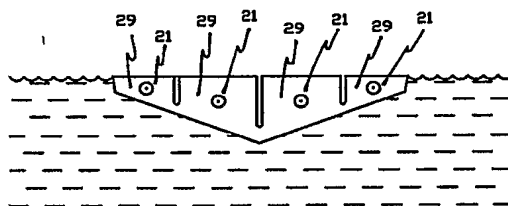


FIG 4

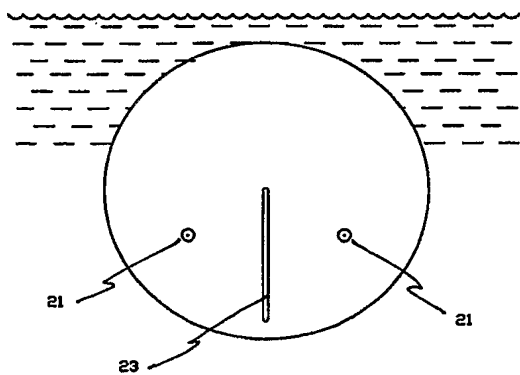


FIG 5

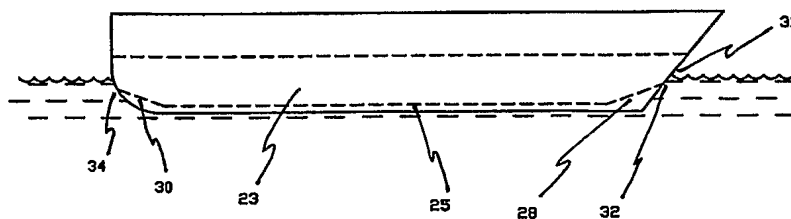


FIG 6

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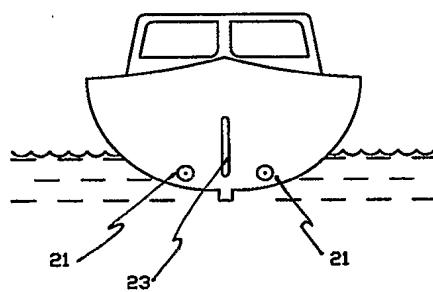
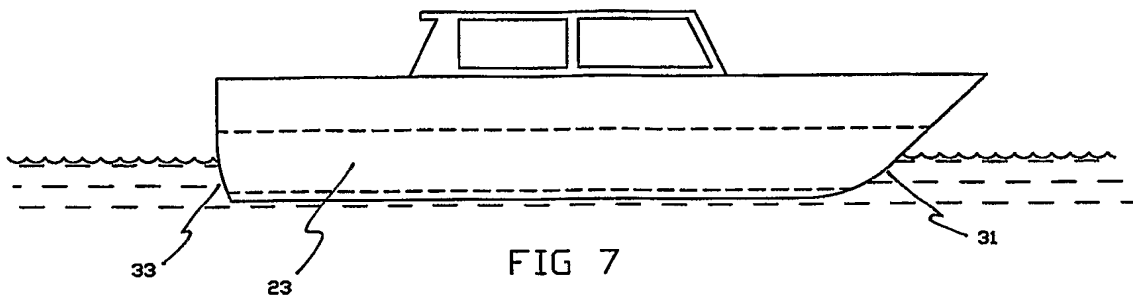


FIG 8

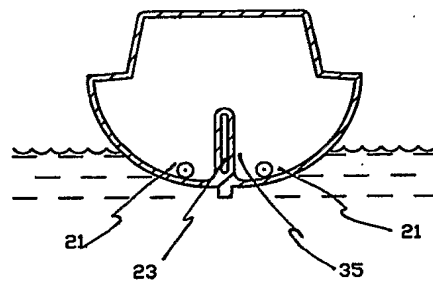


FIG 9

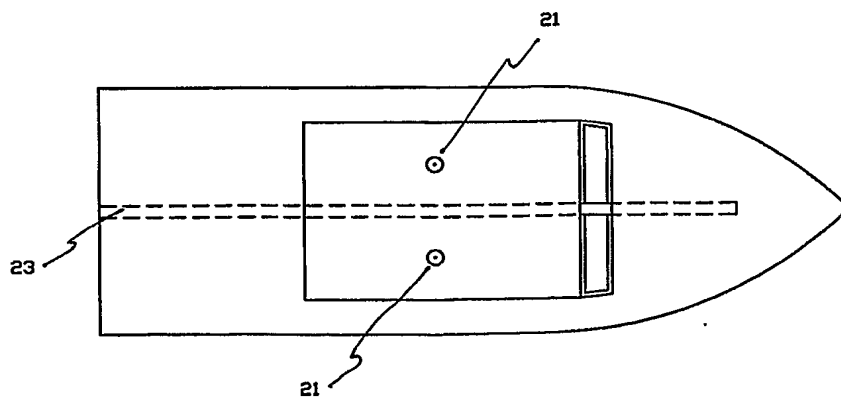


FIG 10

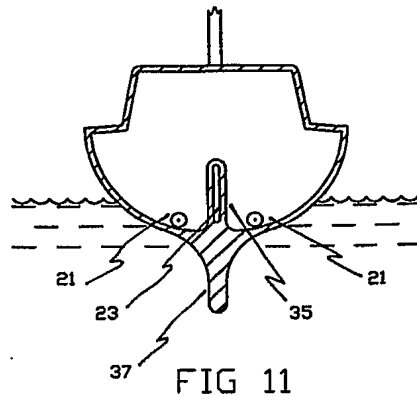


FIG 11

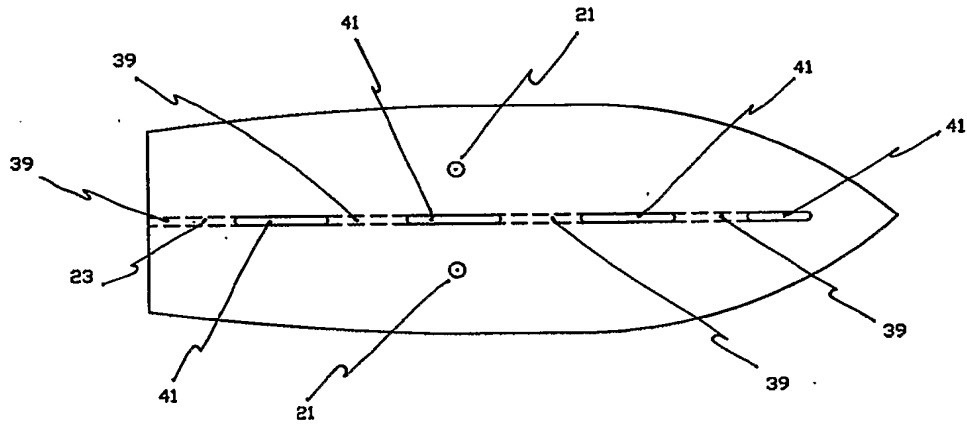


FIG 12

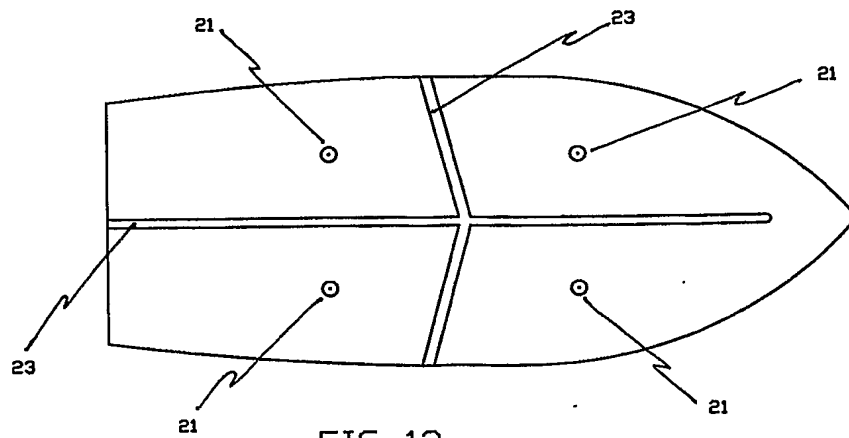


FIG 13

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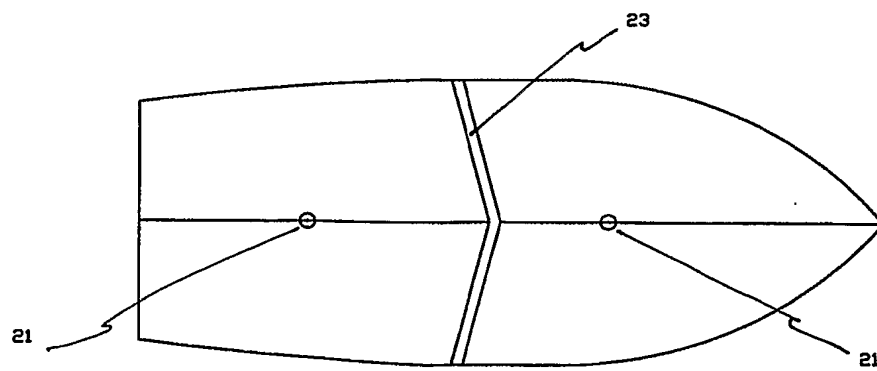
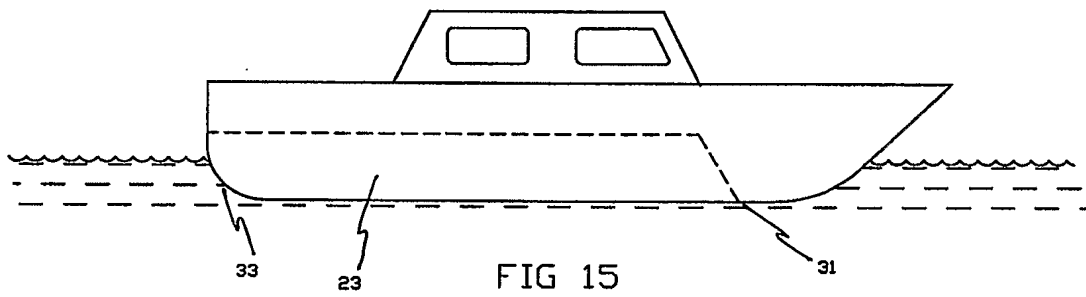
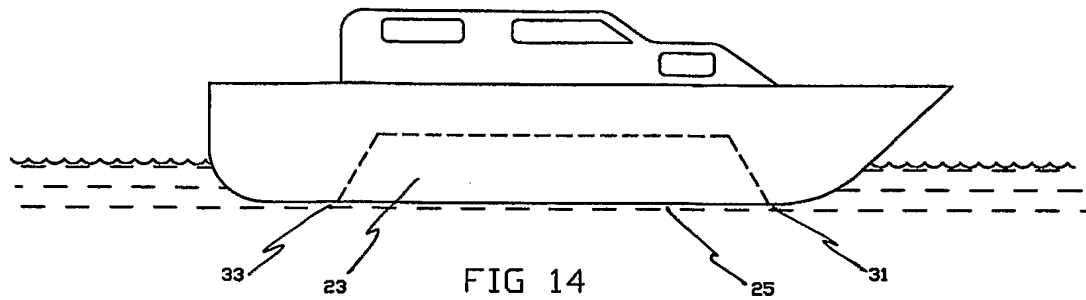


FIG 16